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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,486	11/10/2003	David Punsalan	200312536-1	5126

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EXAMINER	
WILKINS III, HARRY D	
ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
03/31/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/705,486	PUNSALAN ET AL.	
	Examiner	Art Unit	
	Harry D. Wilkins, III	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-18 and 53-73* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *17 and 64-72* is/are allowed.

6)☒ Claim(s) *1,3-16,18,53-63 and 73* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status

1. The rejection of claims 1-16, 18 and 53-56 under 35 U.S.C. 112, second paragraph have been withdrawn in view of Applicant's amendment to claim 1 clarifying that the perimeter support is associated with the substrate such that it supports to formed film.

Claim Scope Interpretation

2. Applicant has argued the scope of the claim term "electrodepositing" to mean an a method involving an electrolytic reaction. However, no express definition was set forth in the specification as filed for the term "electrodepositing". Thus, it is treated for purposes of examination as a method involving deposition of material utilizing electricity, not necessarily also involving an electrolytic chemical reaction.

3. Of note is claim 18 that further limits the term "electrodepositing" by stating that the electrodepositing comprises "electrolytic deposition". If "electrodepositing" meant "electrolytic deposition" then that feature of claim 18 would not have been necessary.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

> only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 57 and 58 are rejected under 35 U.S.C. 102(a) or (e) as being anticipated by Furuya (US 2003/0134177).

Furuya anticipate the invention as claimed. Furuya teaches (see figure 1, abstract and paragraphs 55 and 110-115) the electrophoretic deposition of a film made of fluororesin particles (i.e.-a solution already comprising polymer units) and carbon black.

Regarding the recitation "fuel cell electrolyte", that is the intended use of the claimed film formed by the method. As such it is given little patentable weight. The film formed by Furuya included a fluororesin matrix with embedded carbon black which would have been capable of being used as a fuel cell electrolyte.

Regarding claim 58, Furuya suggests forming films of Nafion® (perfluorosulfonate polymer).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 3-16, 18, 53-63 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al (US 5,281,327) in view of Murphy et al (US 6,059,943) and Yoshida (US 2003/0071259) with evidence from Mesite et al (US 3,627,859).

Honda et al teach (see abstract, drawings and cols. 1-2) a method of forming a material including the steps of 1) removably coupling a perimeter support (2, 2') to a temporary substrate (3) and 2) electrodepositing a polymeric material film (6) on to the temporary substrate. The formed film is supported at its perimeter by the perimeter support.

With respect to the recitation in the claim of "forming an electrolyte", this limitation relates to the intended use of the claimed method and is not given significant patentable weight. Further, Honda et al teach (see col. 3, lines 12-29) that the polymer of the resin layer included polymers polymerized from monomers such as vinylidene fluoride. Polyvinylidene fluoride was known to be effective as an electrolyte in fuel cells, as shown by Mesite et al (US 3,627,859).

Additionally, it is noted that although Applicant's disclosure describes the formed membrane becoming attached during formation to the perimeter support, this feature is not required by the claims.

Thus, Honda et al fail to teach depositing a combination of structural material (ceramic particles) and polymeric (electrolyte) material such that the electrodeposition included electrophoretic deposition to form an electrolyte *composite* film.

Murphy et al teach (see abstract, figure 12, col. 8, lines 35-44 and the paragraph spanning cols. 8 and 9) composite polymer (including polyvinylidene fluoride)-metal oxide membranes that are quite suitable for use as membranes for fuel cells, and reduced the dependence on water of the membrane. Additionally, Murphy et al suggest using perfluorosulphonic acid based polymers.

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized the method of making a polymeric film of Honda et al to make the polymeric-metal oxide composite membrane of Murphy et al because the process of Honda et al was capable of easily forming coherent polymer films and the composite membrane of Murphy et al reduced the dependence on water of the ion-exchange membrane.

Yoshida teaches (see abstract and paragraphs 345-346) that the deposition of ceramic particles can occur simultaneously with deposition of polymeric particles by an electrophoretic mechanism.

Therefore, one of ordinary skill in the art would have had a reasonable expectation of successfully applying a co-deposition process to form both the polymer matrix and embedded ceramic particles taught by Murphy et al.

Regarding claim 5, the perimeter support of Honda et al was a gasket.

Regarding claim 6, the temporary substrate of Honda et al was an electrode.

Regarding claim 7, Honda et al teach (see figure 1) that the temporary electrode was the negatively charged electrode.

Regarding claims 8-10, Honda et al teach (see col. 5, lines 37-47) using metallic material as the temporary substrate, particularly stainless steel. Stainless steel inherently includes at least some nickel due to standard manufacturing processes.

Regarding claim 11, although Honda et al are silent with respect to using a release material, since the film was to be separated from the temporary substrate, it would have been obvious to one of ordinary skill in the art to have provided a material

that made the separation easier. Honda et al teach (see figure 3 and paragraph spanning cols. 2 and 3) that the formed film (6, 7) is separated from the electrode (3).

Regarding claims 13, 15 and 16, Honda et al teach (see col. 2, line 48 to col. 3, line 3) that two distinct layers were formed in the process. Since both layers formed by electrodeposition, the second layer (7) would have been formed by electrodeposition of ions from the solution.

Regarding claim 14, Murphy et al suggest (see paragraph spanning cols. 8 and 9) using perfluorosulphonic acid as the matrix of the formed electrolyte.

Regarding claim 18, Honda et al teach (see abstract) that the deposition of the polymer occurred by "electrolytic polymerization". The deposition of ceramic particles is done by electrophoresis, as discussed above.

Regarding claim 53, Murphy et al in view of Yoshida suggest the simultaneous deposition of the polymer particles and ceramic structural particles.

Regarding claim 54, the electrolyte film of Murphy et al conducts ions when moisture is present.

Regarding claim 55, Murphy et al suggest (see Example 2) forming an anode and cathode on opposing sides of the electrolyte membrane to form a fuel cell.

Regarding claim 56, although Honda et al teach placing the temporary substrate in a solution, and then adding the monomer units, it would have been within the expected skill in the art to reverse the order by adding the monomer units to the solution prior to contact with the temporary substrate, with the expectation that the process would still proceed in the same manner.

Regarding claim 57, as discussed above, the materials utilized by Murphy et al included materials suitable for use as electrolytes in fuel cells.

Regarding claim 58, Murphy et al suggests (see paragraph spanning cols. 8 and 9) using perfluorosulphonic acid as the polymer membrane.

Regarding claim 59, Murphy et al suggests adding ceramic particles to the solution to form an electrolyte composite film.

Regarding claim 60, Honda et al discloses disposing a perimeter support on the temporary substrate as claimed.

Regarding claim 61, although Honda et al are silent with respect to using a release material, since the film was to be separated from the temporary substrate, it would have been obvious to one of ordinary skill in the art to have provided a material that made the separation easier.

Regarding claims 62 and 63, Honda et al teach a second depositing step by electrolytic polymerization of monomer units from solution, wherein the monomer units included at least one functional group including halogen atoms and alkylsulfonic groups. Perfluorosulfuonate ionomers contained halogen atoms and sulfonic groups.

Regarding claim 73, Honda et al discloses depositing the material onto the temporary substrate adjacent the perimeter support. The perimeter support bounds the deposited film, such that the support and the film are “coupled” to each other. Applicant has failed to define that the “coupling” of claim 73 requires permanent attachment between the perimeter support and the temporary substrate.

Allowable Subject Matter

8. Claims 17 and 64-72 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or suggest formation of a polymeric film with use of a perimeter support (gasket) wherein the film becomes attached to the perimeter support such that both are removed from a temporary substrate as an integral unit, such as a membrane assembly.

Response to Arguments

10. Applicant's arguments filed 30 January 2008 have been fully considered but they are not persuasive. Applicant has argued that:

a. Furuya fails to teach making a fuel cell electrolyte.

In response, as discussed above, the recitation of "fuel cell electrolyte" is the intended use of the claimed film formed by the method. As such it is given little patentable weight. The film formed by Furuya included a fluororesin matrix with embedded carbon black which would have been capable of being used as a fuel cell electrolyte.

b. Honda et al fails to teach electrodeposition, rather, Honda et al teach electropolymerization.

In response, Applicant's remarks with respect to "electro-polymerization" are noted, but Applicant's attention is directed to the present specification at paragraph 16, where electrodeposition is defined as meaning the precipitation of a material at an electrode as the result of a passage of an electric current through or an application of an

electrical field on a solution or suspension of material. Thus, electro-polymerization falls within Applicant's broad definition of the term electrodeposition. Further, it should be noted that Murphy et al in view of Yoshida make the suggestion of using electrophoresis to deposit an electrolyte composite film, so Applicant's remarks as to the specific process of Honda et al are not of sufficient merit.

c. Yoshida fails to teach deposition, but is related to an electrophoretic display.

In response, although the overall of disclosure of Yoshida is related to an electrophoretic display, the display operates by temporarily depositing the electrophoretic particles on one of the electrodes. The teachings of Yoshida show that the electrophoretic deposition of ceramic particles can occur simultaneously with deposition of polymeric particles.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

hdw